DOCUMENT RESUME

ED 049 003 RE 003 418

AUTHOR	Aulls, Mark W.
TITLE	Toward a Systematic Approach to How the Reader Uses Context to Determine Meaning.
PUB DATE	Dec 70
NOTE	15p.; Paper presented at the National Reading Conference, St. Petersburg, Fla., Dec. 3-5, 1970
AVAILABLE FROM	Twentieth Yearbook of the National Reading Conference, Marquette University, 1217 W. Wisconsin Ave., Milwaukee, Wis. 53233 (In press)
EDRS PRICE	EDRS Price MF-$0.65 HC Not Available from EDRS.
DESCRIPTORS	*Context Clues, Grammar, Language Skills, Linguistics, *Linguistic Theory, Models, *Psycholinguistics, *Reading Comprehension, Reading Skills, *Research Design, Semantics, Syntax

ABSTRACT

Because of a lack of systematic structuring, much of the research pertaining to the variables influencing the reader's use of context as an aid to determining the meaning of textual units is limited in its applicability. Some of the major variables that have been found to influence the reader's use of context are constraints of textual segment, word frequency, syntactic variables, and grammatical class form of a word. Theoretical models of grammar developed by linguists have provided a frame of reference within which hypotheses and the results of empirical tests can be linked together to formulate theoretical constructs directed toward new areas of reading research. Ultimately theory must include both syntactic and semantic accounts of the textual constraints used by the reader to determine meaning during the reading act. Finally, the outcome of research efforts must be translated into the reading skills language and made relevant to instructional practices. A bibliography is included. (Author/DH)

TOWARD A SYSTEMATIC APPROACH TO HOW THE READER USES CONTEXT TO DETERMINE MEANING

Mark W. Aulls

University of Georgia

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL BY MICROFICHE ONLY HAS BEEN GRANTED BY
National Reading Conference
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

ED049003
RE003 418

What variables influence the reader's use of context as an aid to determining the meaning of ambiguous textual units? The outcomes of researchers' attempts to explore specific hypotheses related to this question tend to lack a systematic structuring. The purpose of this paper is 1) to present a brief overview of what major variables have been found to influence the reader's use of context, 2) to present several reasons for the lack of a systematic structuring of empirical findings, and 3) to suggest that at least the effects of semantic and syntactic variables on the reader's use of context must be established to formulate a systematic data base from which a comprehensive account of the relevant facts can be made.

Rentz (40) stated that theory is the ultimate objective of science. He contends that methodology must be within its proper context as only a portion of a larger research process. Thus, there exists a depending relationship between theory and data, such that theory must always refer back to empirical reports and at the same time point forward to new empirical areas. Reading research concerned with what variables influence the reader's use of context to determine meaning has been sorely

lacking a consistent production of movement from empirical reports toward new empirical areas.

Weaver (53) pointed out that regardless of what criterion of research is used, reading investigations have not produced theoretical structures which engender confidence that any sort of theory-research interchange is going on.

The applicability of Weaver's observations to the study of context is suggested by the broad gap between approaches to the study of context used by psycholinguistic and educational researchers. Moreover, a direct information interchange appears to preclude a theory-research interchange (34).

Studies of context carried out from 1942 to 1965 by reading specialists have substituted a priori opinion for theory development and have been narrowly confined to clue schemes (6; 31; 45; 46; 23; 17; 3; 37; 38). Clues such as main ideas, parenthetical clauses, mood and tone, words in a series etc. have been analyzed. However, the studies of such textual segments have not been carefully controlled. The measures, the responses, the research designs, and the statistical analyses used have been too confounded to offer a data base for theory-research interchange.

Psycholinguistic research has tended to try to establish empirical data to define the constraints of textual segments. Position of a word (1; 42; 25) has been found to place constraint on the correct responses given to a deleted word. The bilateral distribution of a text (2; 18), grammatical class form of a word (52; 7; 30; 36), word frequency (57; 24;22) and syntactic variables (12; 20; 48; 14) have been shown to influence the reader's response to a completion task where words are

deleted from a textual situation by some specified procedure. However, psycholinguistic findings also lack an ordered structuring from which new empirical areas can be clearly suggested.

Weaver's (51) propositions about responses to cloze measures provided a structure that pointed to new areas of empirical study relevant to the description of the reader's use of context to determine the meaning of a word unit. He proposed that reading, as decoding, proceeds sequentially from left to right and perpendicularly at every language unit in the sequence. Thus, a deletion met in context imposes on the reader a search procedure controlled by hypothetical differential relationships among the immediate syntactic and semantic variables on particular language units. Weaver did not consider human search procedures to be logical or exhaustive. Yet, since 1965, few reading researchers (8) have used cloze procedures systematically to determine differentials between semantic and syntactic constraint variables.

There have been a number of recent psycholinguistic studies of reading which lean heavily on models of grammar developed by theoretical linguists. Perhaps Chomsky (9; 10) has been given to be the most prominent source of influence. The importance of theoretical models of grammar lies in the fact that they provide a frame of reference, within which hypotheses and the results of empirical tests can be linked together to formulate theoretical constructs directed toward new areas of reading research. An excellent example, Schlesinger's (43) investigations of sentence structure provided a series of studies yielding data about the effects of syntactic variables on reading behaviors. Schlesinger's research was unique because it included systematic experimentation, utilized replication to test alternative sources of explanation, focused

on one specified level of textual constraint, and proceeded within a set of specific research hypotheses formulated in concordance with a model of grammar.

Certainly, evidence has been found without models that syntax effects the determination of word meaning and effects the interpretation of units of printed information larger than the word. Syntactical constraint variables have been reported to operate at both mature and beginning stages of reading behavior.

Miller's (32) early exploratory studies of oral conversation showed that the unit of speech is larger than the word unit and nearer a syntactic constituent. Since then, a number of studies have offered compelling evidence that the reader decodes print in units which are syntactically determined (28; 33; 54; 11).

One sound indication of the efficacy of syntactic effects on the reader's use of context is the consistency of reports using different response indices. A variety of response indices have been used which indicate that the reader is highly sensitive to the grammatical relations of the content he reads. Labov (29) used proper intonation of homonyms as an indicator of the presence of syntactical constraint effects on decoding word units. Oral reading error indices (21; 55) have been used to analyze, by logical deduction, the operation of syntactical constraints on textual units larger than the word. Response latencies (4) as units of analysis have indicated that latencies to oral probes are longer at syntactic constituents. Indices of correct responses to completion measures (13) or multiple choice measures (49) under varying, nonsensical or distorted language conditions suggest that syntactical variables may pose more serious problems for decoding than will distortions of semantic variables.

Hence, theoretical models of grammar have indirectly led to a dearth of studies which, when systematically gathered and analyzed, may provide estimates of the parameters of syntactical constraint variables operating on the reader's use of context to determine meaning.

The lack of systematic research reports like Schlesinger's should be a matter of grave concern. That is, even an abundance of rigorous research findings doesn't ipso facto provide a clear view of the interrelationships between syntactic variables.

An implicit danger in the present approaches to studying context is in emphasizing bits and pieces of reading behavior (34) to the exclusion of the formulation of theory which ultimately includes both syntactic and semantic accounts of the textual constraints used by the reader to determine meaning during the reading act.

Semantic theory (26; 47) has been stated to take over the explanation of a speaker's ability to produce and understand new sentences at the point where grammar leaves off.

Katz & Fodor (26) suggested the form in which such a theory may be characterized. The objective of semantic theory would be to reconstruct the interpretation sentences (p. 181). Though a logical distinction between a theory of grammar and a theory of semantics is desirable, its psychological existence is a matter of empirical test. Two obvious distinctions may suggest the basis for a logical separation. First, suppose one reads "The dog bit me" and "The rat bit me." Though the sentences only differ morphemically, they are interpreted as different in meaning. Other sentences differing only morphemically are interpreted as identical in meaning, e.g. "The oculist examined me" and "The eye doctor examined me." Grammar cannot account for these facts. Second, some

sentences of radically different syntactic structure are synonymous, while other syntactically different sentences are not, e.g. "Three girls are in the room" and "There are at least three persons in the room and each is a girl. Grammar cannot account for the interpretation of these types of sentence structures. Katz & Fodor (26) point out that the interpretation of such sentences is determined in part by the meanings of their morphemes and by semantic relations among morphemes. They suggest a theory of semantics must include at least a dictionary component and a set of rules with which to project variables that effect the possible readings of ambiguous sentences and the selection cues used to interpret lexical meanings.

Raygor (39) purported that the development of a definition of reading must specify the stimulus response situation and a criterion for determining whether a response is in control of a stimulus. Similarly, studies of semantic variable and syntactic variable functions should be carried out by specifying the independent variables, and the units of observation inferred to represent that the observed response is in fact under control of the hypothesized stimulus.

However, a note of caution is merited where language situations are contrived such that they have no counterpart in natural language or textual situations. To be sure, studies of highly nested sentence structures (43) or negative, passive, and negative-passive sentence forms (49) have been shown to fit Raygor's criteria for defining reading but are highly contrived and artificial samples of the difficulty of interpreting textual or oral language segments. Furthermore, caution is warranted in assuming that learning and comprehension processes are necessarily isomorphic and that the variables identified as important in one situation are equally

important in the other. For example, Danks (15) found that interword association and word frequency individually accounted for only one percent of the variance where the dependent variable of interest was sentence understanding as measured by response latency indices. Assuredly Danks' findings are limited to mature readers. Yet, other investigators (50; 41), working with similar age levels, have shown both variables to have significant effects on learning of verbal material.

A few studies have been carried out which empirically contribute to the efficacy of the common sense notion that semantic as well as syntactic constraints must ultimately account for the determination of meaning during the reading act.

At the word level where a reader is confronted with an unknown word (56), studies have shown that low-literate adults as well as younger children give evidence of a lack of differentiation between word meaning and sentence meaning. Often meanings of words were entirely dependent upon the meaning of the sentence. A more recent replication of these findings (5) indicated that concept attainment of an unknown word is facilitated by a small variety of good context settings. But if the contextual setting is poor, a large variety on contexts is more likely to produce a learned word at a conceptual level (pp. 25-30). Apparently the effects of varied context is dependent on contextual constraint variables.

At the sentence level of interpretation Danks (15) found that the understanding of sentences was primarily a function of meaning and to a lesser extent a function of grammar. Ratings of sentence comprehensibility were also shown to yield three factors comprising the comprehensibility of sentences: 1) ungrammaticalness, 2) unmeaningfulness and 3) the joint function of grammar and lexical meaning. Downey & Hakes (16), and Deese

(44) have shown that subjects can scale meaningfulness independently from grammaticalness when presented with semantically deviant sentences. Perhaps the same kinds of rules profitable in the analysis of syntax constraints may not be productive when applied to the study of semantic constraints operating on the reader while he interprets sentence meaning (35).

At the paragraph level, Koen, Becker & Young (27) have suggested that the paragraph is a psychologically real unit. Furthermore, they found that the identification of paragraph structures in normal English versions of [illegible] based on semantic cues. A median correlation of .71 was found between the proportion of subjects marking paragraph boundaries in nonsense and normal versions of the same English passages. The responses of children, ages 7 to 8, indicated that the concept of "paragraph" was not meaningful to them. Furthermore, the relationship between semantic and formal markers contributing to the discrimination of paragraph structures was not a simple one (p. 53). Identification of paragraph structure appeared to be effected by increases in age and educational experience.

In conclusion, definitions of context and specific concextual constraint components must arise out of experimental research designs which account, through experimental manipulation, for the independent effects and interaction effects of semantic and syntactic textual variables.

The inclusion of hypothetical constructs as analogues to theory development are necessary. They provide a framework within which empirical findings can be systematically tested and, thereby, used to formulate new directions which lead to a comprehensive mapping of those textual constraints used by the reader to determine meaning at various levels of the organization of coded information. To accomplish such an ambitious

goal requires that at least syntactic and semantic models be developed which are logically consistent with the facts known about textual constraint variables. When operationally defined these variables can be systematically tested. Models should be replicated across developmental levels of reading behaviors. The means of obtaining response observations should be considered intervening variables. Observational conditions must be replicated to ensure that sampling error alone is not accountable for the accountable variance and/or statistical differences attributed to semantic or syntactic variables. Finally, the outcomes of such research efforts must be translated into the reading skills language and teaching situations relevant to the instructional practices of reading specialists.

References

1. Aborn, M. & Rubenstein, H. Word-class distribution in sentences of fixed length. Language, 1957, 32, 666-674.
2. Aborn, M., Rubenstein, H. & Sterling, T. D. Sources of contextual constraint upon words in sentences. Journal of Experimental Psychology, 1959, 57, 171-180.
3. Ames, W. S. The development of a classification scheme of contextual aids. Reading Research Quarterly, 1966, 2, 57-82.
4. Ammon, P. R. The perception of grammatical relations in sentences: a methodological exploration. Journal of Verbal Learning and Verbal Behavior, 1968, 7, 869-875.
5. Amster, Harriett. Two processes of concept formation: associative and deductive. Highlights of the Pre-Convention Institutes, International Reading Association, Seattle, Wash., 1967, 25-30.
6. Artley, A. S. Teaching word-meaning through context. Elementary English Review, 1943, 20, 68-74.
7. Bhooma, Vembah K. The effects of selected blackout conditions on reading test item responses. Unpublished doctoral dissertation, University of Georgia, 1969.
8. Bickley, A. C., Ellington, Billie J. & Bickley, Rachel. The cloze procedure: a conspectus. Journal of Reading Behavior, 1970, 232-249.
9. Chomsky, N. Syntactic Structures. The Hague: Mouton, 1957.
10. Chomsky, N. Explanatory models in linguistics. In E. Nagel, P. Suppes and A. Tarsky (Eds.) Logic, Methodology and Philosophy of Science: Proceedings of the 1960 International Congress, Stanford, Calif., Stanford University Press, 1962.

11. Clay, M. M. A syntactic analysis of reading errors. Journal of Verbal Learning and Verbal Behavior, 1968, 7, 434-438.

12. Clay, M. M. Reading errors and self-correction behavior. The British Journal of Educational Psychology, 1969, 39, 57.

13. Coleman, E. B. Learning prose written in four grammatical transformations. Journal of Applied Psychology, 1965, 332-341.

14. Coleman, E. B. On understanding prose: some determiners of its complexity. Unpublished report, New Mexico State University, 1965.

15. Danks, J. H. Grammaticalness and meaningfulness in the comprehension of sentences. Journal of Verbal Learning and Verbal Behavior, 1969, 8, 687-696.

16. Downey, R. G. & Hakes, D. T. Some psychological effects of violating linguistic rules. Journal of Verbal Learning and Verbal Behavior, 1968, 7, 158-161.

17. Edwards, T. J. Context clues and word mastery in the junior college. Junior College Journal, 1959, 29, 392-398.

18. Ervin, Susan M. Correlates of associative frequency. Journal of Verbal Learning and Verbal Behavior, 1963, 1, 421-231.

19. Goldman-Eisler, F. & Cohen, M. Is N, P, and PN difficulty a valid criterion of transformational operations? Journal of Verbal Learning and Verbal Behavior, 1970, 9, 162-163.

20. Goodman, Yetta M. A psycholinguistic description of oral reading phenomena in selected young beginning readers. Unpublished doctoral dissertation, Wayne State University, 1967.

21. Goodman, K. S. Study of children's behavior while reading orally. Report of Project No. 8425, Contract No. OE-6-10-136, U.S. Dep. of Health, Education and Welfare, 1968.

22. Gorman, Aloysia. Recognition memory for nouns as a function of abstractness and frequency. Psychological Review, 1959, 23-28.

23. Guarino, E. A. An investigation of the effectiveness of instruction designed to improve the reader's skill in using context clues to derive word meanings. Unpublished doctoral dissertation, Syracuse University, 1960.

24. Hall, J. F. Learning as a function of word-frequency. American Journal of Psychology, 1954, 67, 138-140.

25. Kaplan, A. An experimental study of ambiguity and context. R.A.N.D. Corp., P-187, 1950.

26. Katz, J. J. & Fodor, J. A. The structure of a semantic theory. Language, 1963, 39, 170-210.

27. Koen, F., Becker, A. & Young, R. The psychological reality of the paragraph. Journal of Verbal Learning and Verbal Behavior, 1969, 8, 49-53.

28. Kolers, P. A. Three stages of reading. In H. Levin and Joanna Williams (Eds.) Basic Studies on Reading, New York: Basic Books, in press.

29. Labov, W. Some sources of reading problems for Negro speakers of nonstandard English. In A. Frazier (Ed.) New Directions of Elementary English, Chicago: NCTE, 1967, 140-167.

30. Louthan, V. Some systematical grammatical deletions and their effects on reading comprehension. English Journal, 1965, 54, 295-299.

31. McCullough, Constance M. The recognition of context clues in reading. Elementary English Review, 1945, 22, 1-8.

32. Miller, G. A. Some psychological studies of grammar. American Psychologist, 1962, 19, 748-762.

33. Morton, J. A model for continuous language behavior. Language and Speech, 1964, 7, 40-70.

34. Otto, W. Reading behavior: fact or artifact. Journal of Reading Behavior, 1970, 2, 227-229.

35. Perfetti, C. Lexical density and phrase structure depth as variables in sentence retention. Journal of Verbal Learning and Verbal Behavior, 1969, 8, 719-724.

36. Potter, T. C. Reading skills in young children: closure and comprehension. Unpublished doctoral dissertation, University of California, Los Angeles, 1968, 1-124.

37. Quealy, R. J. Senior highschool students' use of contextual aids in reading. Reading Research Quarterly, 1969, 4, 514-533.

38. Rankin, E. F. & Overholser, Betsy M. Reactions of intermediate grade children to contextual clues. Journal of Reading Behavior, 1969, 1, 50-73.

39. Raygor, A. Some notes on the problem of definition in reading. Unpublished paper presented at the NRC Conference, Atlanta, Georgia, 1969.

40. Rentz, R. R. Selected topics in the logic of research. Unpublished paper, Educational Research Laboratory, University of Georgia, 1970.

41. Rosenberg, S. Recall of sentence as a function of syntactic and associative habit. Journal of Verbal Learning and Verbal Behavior, 1966, 5, 392-396.

42. Rothkopf, E. Z. Learning from written sentences: effect of order of presentation on retention. Journal of Verbal Learning and Verbal Behavior, 1963, 4, 470-475.

43. Schlesinger, I. M. Sentence Structure and the Reading Process. The Hague: Mouton, 1968, 126-127; 140-141.

44. Schwartz, D., Sparkman, J. P. & Deese, J. The process of understanding and judgments of comprehensibility. Journal of Verbal Learning and Verbal Behavior, 1970, 9, 87-93.

45. Seibert, Louise C. A study of the practice of word guessing word meanings from a context. Modern Language Journal, 1945, 29, 296-322.

46. Stearns, G. B. The construction and evaluation of a test designed to measure the ability of highschool pupils to understand word meanings through the use of context. Unpublished doctoral dissertation, School of Education, Boston University, 1954.

47. Steinberg, D. D. Analyticity, amphigory, and semantic interpretation of sentences. Journal of Verbal Behavior and Verbal Learning, 1970, 9, 38-39.

48. Tatham, Susan M. Reading comprehension of materials written with selected oral language patterns: a study at grades two and four. Reading Research Quarterly, 1970, 5, 402-426.

49. Tuinman, J. Selected aspects of the assessment of the acquisition of information from reading passages. Unpublished doctoral dissertation, University of Georgia, 1970.

50. Tulvung, E. & Patkau, J. E. Concurrent effects of contextual constraints and word frequency on immediate recall and learning of verbal material. Canadian Journal of Psychology, 1962, 16, 83-95.

51. Weaver, W. W. Theoretical aspects of the cloze procedure. The Philosophical and Sociological Bases of Reading: Fourteenth Yearbook of the NRC, Milwaukee, Wisconsin, 1965, 115-132.

52. Weaver, W. W., Bickley, A. C. & Ford, F. G. Information removed from multiple-choice item responses by selected grammatical categories. Psychological Reports, 1968, 23, 613-614.

53. Weaver, W. W. The contribution of research to reading theory. Journal of Reading Behavior, 1969, 1, 4.

54. Weber, Rose-Marie. The study of oral reading errors: a survey of the literature. Reading Research Quarterly, 1968, 4, 96-119.

55. Weber, Rose-Marie. A linguistic analysis of first-grade reading errors. Reading Research Quarterly, 1970, 5, 427-450.

56. Werner, H. Change of meaning: a study of semantic processes through the experimental method. Journal of General Psychology, 1954, 50, 181-208.

57. Wilcox, R. C. Effects of context, Thorndike-Lorge frequency, and race of subjects on continuous word association. Psychological Reports, 1968, 23, 1255-1260.